

Children's School Bus Exposure Study

The Children's School Bus Exposure Study measured how much air pollution children may be breathing during their school bus trips. Air pollution concentrations were measured inside five diesel school buses over school bus routes in Los Angeles. Cleaner buses were also included for comparison - one bus equipped with a particle filter and another bus powered by natural gas. A special marker gas was added to the tailpipe to see how much exhaust got back into the bus.

What Did the Study Tell Us?

The study found that typical diesel school buses had higher levels of diesel exhaust inside the bus compared to passenger cars on the road. This difference came from "self pollution," where some of the bus exhaust got back into the bus after leaving the tailpipe.

- Self-pollution is worse when the windows are closed and even worse on older buses.
- Natural gas-powered buses and diesel buses with a particle filter have lower levels of diesel pollution inside compared to regular diesel buses.
- Heavy traffic surrounding the bus increases the level of pollution inside the bus.
- Most exposure comes from the ride itself, not from bus stops or idling.

What Does It Mean?

- ❖ Children who ride older school buses likely have increased exposure to air pollutants.
- ❖ Children with asthma are at greater risk of an asthma attack if they have long bus commutes.
- ❖ Because commuting by school bus is much safer than commuting by automobile, the results of this study do not justify removing children from school buses.

How Can We Reduce Exposures?

The Air Resources Board recommends that schools take the following steps:

- Install exhaust particle filters on existing buses.
- Replace the oldest buses with new buses, either alternative-fuel buses such as natural gas, or diesel buses with particle filters.
- Use newer buses on the longer routes.
- Bus maintenance should include attempts to eliminate visible exhaust.
- Enforce bus idling restrictions at schools (see web site below).

Bus drivers can:

- Keep windows of older buses open, when comfort allows.
- Encourage children to sit in the front of the bus if the bus is not full.
- Avoid congested roads, where possible.
- Avoid directly following other diesel vehicles, where possible.
- Minimize bus caravanning or put the newest bus in front.

For More Information

- ❖ For more information on the Children's School Bus Exposure Study, visit the study web site at: <http://www.arb.ca.gov/research/schoolbus/schoolbus.htm>
- ❖ For information on the ARB's Lower-Emission School Bus Program for the purchase of cleaner school buses, visit the web site at: <http://www.arb.ca.gov/msprog/schoolbus/schoolbus.htm>
- ❖ For information on the ARB's School Bus Idling restrictions, visit the web site at: <http://www.arb.ca.gov/toxics/sbidling/sbidling.htm>

For more information, contact the ARB's Public Information Office at (916) 322-2990.